

Forest Pest Management

Pacific Southwest Region



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Subject: Red turpentine beetle activity following a prescribed burn in the Volcano Plantation. (Report #NE98-8)

To: District Ranger, Foresthill RD, Tahoe National Forest

At the request of Gail Parn, District Silviculturist, I visited the Volcano prescribed burn on September 3, 1998. District personnel had observed pitch tubes on trees in the underburn over the past few months. The objective of the field visit was to examine some the trees to observe the bark beetle activity, identify the bark beetles involved and to discuss what influence the attacks may have on tree survival. The prescribed fire was conducted on November 27, 1997 and encompassed 403 acres.

The Volcano plantation was established following a stand replacing fire. The plantation is comprised primarily of 30-35 year old ponderosa pine and covers about 10,000 acres. Several of the ponderosa pine trees within the underburn have numerous red turpentine beetle (RTB), Dendroctonus valens, attacks. The attacks occurred this spring and are primarily located in areas where there is bark scorch and cambium damage from the fire. The number of attacks (pitch tubes) on individual trees we examined ranged from 2 to 25+. Both successful and unsuccessful attacks were present.

The red turpentine beetle normally attacks injured, weakened or dying trees and freshly cut stumps. The adults are attracted by fresh pine resin. In the Volcano underburn the red turpentine beetles were attracted to trees with fire-related injuries. A beetle-produced aggregation pheromone is also important in attracting additional beetles into suitable hosts. Attacks usually occur at the soil line or root crown and are characterized by a large reddish pitch tube at the point of entry. If an attack is successful, the adults excavate an irregular gallery in the cambium and the female lays eggs along the sides. Attacks usually do not kill trees but may predispose them to attack by other bark beetles. Repeated or extensive attacks by the red turpentine beetle can kill pines.

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Little can be done to control red turpentine beetles once they are beneath the bark. Good health and vigor in a tree and minimizing fire-related injuries are the best protection against infestation. The feeding activity of the adult beetles and their larval offspring kills a limited amount of living tissue. If enough beetles attack a tree so that feeding areas overlap the tree will die as a consequence of the girdling.

Over the past three years elevated levels of red turpentine beetle activity have been noted in several areas in northeastern California. All cases have been associated with wildfires, prescribed fires or thinning activities. To date, these attacks have not caused elevated levels of mortality. In the prescribed fires and wildfires, post-fire mortality has been observed but was caused by fire-related injuries (primarily cambium kill) as opposed to bark beetle attacks. I have been monitoring 50 Jeffrey and ponderosa pine trees on the Lassen NF that were attacked by RTB following a thinning in 1995. The number of attacks on these trees ranged from 2 to 100+ and were found up to 15 ft. up the bole. To date, two trees have died. Based on this information, observations following other fires, and the moist precipitation pattern over the past three years, I would anticipate a minimal amount of mortality related to the red turpentine beetle attacks. Additional mortality related to fire injuries can be expected in areas where the fire was hot enough to burn significant portions of the cambium or in areas where the residual tree crown is not sufficient to sustain the tree.

Observations over the past few years indicate that some level of red turpentine beetle activity should be expected following underburns. Monitoring is ongoing in several areas to determine what level of, if any, mortality should be expected associated with these or other bark beetle attacks dependent upon the season of the burn, the precipitation regime, and the ongoing bark beetle activity in the general area prior to the burn.

If you have any questions regarding this evaluation, request additional assistance, or notice an increase in mortality in the Volcano underburn please contact me at 916-252-6667.



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